ascertaining (1) whether there has been an increase or a decrease during these periods; (2) what proportion the increase or decrease bears to other districts in the Thames valley similarly compared. The result shows that the cancer mortality has increased in all the districts, the increase varying from 0.23 per cent. (Staines) to 2.66 per cent. (Bradfield).

In each of the counties and districts the total deaths from all causes at all ages have been taken, and the total number of deaths from cancer at all ages occurring in each decennium. The figures are computed from the annual reports of the Registrar-General for England during the twenty years. The percentage of cancer deaths to total deaths is thus obtained. This is naturally a crude method and can give only approximately accurate results, but the conditions in regard to age and sex distribution in a given district vary but slowly, and there is less liability to error in comparing the cancer death-rates of the same district or town at the different periods.

The above statistics seem to justify the conclusion that the Thames valley is still associated with a relatively high mortality from cancer. All the districts immediately bordering on the river show a rate in the decennium 1891-1900 above the average rate for the whole of England, the excess varying from 0.15 to 2.53 per cent. This uniform high rate along both banks of the river suggests that there may be a connexion between the river floods and the incidence of cancer, but what that connexion is it is not easy to explain. If we presume that cancer is a parasitic disease, the drying vegetation on the river banks after the floods have gone down may form a favouring nidus for the growth of the parasite. The fact that the majority of the riparial districts show a higher cancer mortality than the non-riparial seems to support this view of probable parasitic infection, seeing that districts nearest the river are most prone to suffer from cancer. This, however, does not explain the cause of the increase of cancer which is everywhere apparent, but given the other unknown predisposing factors which lower the vitality of the human organism to a non-resistant degree, we may have along the banks of the river a more or less constant manufactory of the *materies morbi*, ready to attack the already weakened host, and thus, with the additional risk of infection, there is higher mortality.

The above facts and figures taken as a whole and collectively are not only not inconsistent with the parasitic theory, but they seem to find their best explanation on this hypothesis. They are a contribution to the statistics of the disease whose etiology is at present the vexed question of medicine.

ON THE ACTION OF THE BLOOD SERUM FROM CASES OF ACUTE MENTAL DISORDER ON B. COLI COMMUNIS.

BY

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At the meeting of the British Medical Association at Swansea in 1903 we made a preliminary communication upon the agglutinating power of the blood serum from 25 cases of mental disease upon B. coli. Having since examined a further series of cases, raising the number to 100, we now give the results obtained and the conclusions drawn.

TABLE I.—*Showing the Agglutinative Power of Serum from 100 Cases of various Acute Forms of Insanity upon 25 Mixed and 75 Single Strains of B. Coli Communis:*

Form of Insanity.	No. of Cases.	Good Agglutination.	Partial Agglutination.	No Agglutination.
		Per Ct.	Per Ct.	Per Ct.
Acute melancholea ..	29	5 = 17.2	12 = 41.3	12 = 41.3
Acute mania	53	2 = 3.7	22 = 41.5	29 = 54.7
Delusional Insanity ...	9	2	2	5
General paralysis	6	1	1	4
Alcoholic insanity... ...	2	0	2	—
Acute dementia	1	1	0	—
Total	100	11.0 per cent.	39.0 per cent.	50.0 per cent.

90 dilutions of 1-100 were used, 7 of 1-30, and 3 of 1-50.

39 controls were made, of which { 1 gave a good agglutination = 2.5 p.c. / 5 gave a partial agglutination = 13.0 p.c. / 33 gave no agglutination = 84.6 p.c.

TABLE II.—*Showing Duration of Disease, Degree of Dilution of Serum Used, and Agglutination Results in 29 Cases of Acute Melancholia.*

No. of Case.	Duration.		Dilution.	Result.
1	1 month	1—3 months	1—30	Good agglutination.
2	1 month		1—100	
3	6 months	3—6 months	1—100	
4	8 months	6—12 months	1—100	
5	2 years	over 12 months	1—100	
1	2 weeks	1—3 months	1—100	Partial agglutination.
2	1 month		1—100	
3	2 months		1—100	
4	2 months		1—100	
5	3 months		1—100	
6	4 months	3—5 months	1—100	
7	4 months		1—100	
8	7 months		1—100	
9	7 months		1—100	
10	8 months	6—12 months	1—100	
11	9 months		1—100	
12	10 months		1—100	
1	1 week	1—3 months	1—100	No agglutination.
2	4 weeks		1—100	
3	5 weeks		1—100	
4	6 weeks		1—100	
5	2 months		1—100	
6	2 months		1—100	
7	2 months		1—100	
8	3 months		1—100	
9	4 months	3—6 months	1—100	
10	4 months		1—100	
11	6½ months	6—12 months	1—100	
12	2 years	over 12 months	1—100	

TABLE III.—*Showing Duration of Disease, Degree of Dilution of Serum Used, and Agglutination Results in 53 Cases of Acute Mania.*

No. of Case.	Duration.		Dilution.	Result.
1	2 weeks	1—3 months	1—100	Good agglutination.
2	10 weeks		1—100	
1	3 days	1—3 months	1—100	Partial agglutination.
2	10 days		1—100	
3	3 weeks		1—100	
4	3 weeks		1—100	
5	3 weeks		1—100	
6	4 weeks		1—100	
7	4 weeks		1—100	
8	4 weeks		1—30	
9	6 weeks		1—100	
10	7 weeks		1—100	
11	8 weeks		1—100	
12	8 weeks		1—100	
13	8 weeks		1—100	
14	9 weeks		1—100	
15	9 weeks		1—100	
16	10 weeks		1—100	
17	10 weeks		1—100	
18	10 weeks		1—50	
19	12 weeks		1—100	
20	14 weeks	3—6 months	1—100	
21	5 months		1—100	
22	5½ months		1—100	
1	3 days	1—3 months	1—100	No agglutination.
2	1 week		1—30	
3	1 week		1—100	
4	3 weeks		1—100	
5	3 weeks		1—100	
6	3 weeks		1—100	
7	4 weeks		1—100	
8	4 weeks		1—30	
9	5 weeks		1—100	
10	5 weeks		1—100	
11	6 weeks		1—30	
12	6 weeks		1—100	
13	8 weeks		1—100	
14	9 weeks		1—100	
15	10 weeks		1—50	
16	10 weeks		1—100	
17	10 weeks		1—100	
18	11 weeks		1—100	
19	12 weeks		1—100	
20	12 weeks		1—100	
21	12 weeks		1—100	
22	16 weeks	3—6 months	1—100	
23	16 weeks		1—100	
24	17 weeks		1—100	
25	5 months		1—100	
26	6 months		1—100	
27	6 months		1—100	
28	11 months	6—12 months	1—100	
29	20 years	over 12 months	1—100	

Taking cases of any period up to six months' duration as "recent" cases, Tables II and III show that 71 out of the total 82 cases of acute mania and melancholia were recent, that with but few exceptions the cases giving no agglutination were recent, and that consequently the failure to agglutinate does not depend upon chronicity of the disease.

CONCLUSIONS.

From the tables the following conclusions are drawn:

1. In 50 per cent. of the total cases of acute insanity there was agglutination, whereas this was present in only 15.5 per cent. of the controls.
2. The agglutination was partial in the great majority of the cases (39 per cent.).
3. In those forms of the disease in which the cases were sufficiently numerous to permit of percentages being taken (mania and melancholia), the preponderance of partial over good agglutination was also obvious.
4. The percentage of agglutination (good and partial) was greater (58.5) in the cases of melancholia than in those of mania (45.2).
5. The percentage of good agglutination was greater in melancholia than in mania.
6. Even when the disease is quite recent in duration there is as often as not a failure to agglutinate.

Our thanks are due to Dr. J. H. W. Eyre, of Guy's Hospital, for kindly supplying cultures for the purpose of this work.

CASES OF LATERAL SINUS PYAEMIA.*

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I PURPOSE relating to you my experiences in certain cases of lateral sinus pyaemia associated with middle-ear disease which have been under my care. By this term I mean an extension of the inflammatory processes which we so commonly speak of as mastoid disease to the interior of the lateral sinus, thence to the jugular bulb and the internal jugular vein, and thence, if not arrested, throughout the circulation. My chief reason for this communication is to urge the necessity for prompt and radical surgical interference in these cases, which belong to the class of great surgical emergencies. I will commence with a brief summary of the cases:

CASE I.—Girl, aged 10, admitted to Cardiff Infirmary in 1895. Left mastoid disease. Rigors, headache, and pyrexia for four or five days. Antrum and middle ear cleared out; lateral sinus opened behind mastoid and internal jugular in neck; septic thrombus removed. Temporary remission of symptoms. Death on third day. Necropsy—secondary abscesses in lungs.

CASE II.—Girl, aged 10, admitted Cardiff Infirmary January 2nd, 1899. Right otorrhoea three years following measles. Acute symptoms one week; vomiting, mastoid pain, pyrexia, rapid emaciation; child very ill. Antrum only opened. Death twelve hours later. Necropsy—mastoid portion of lateral sinus filled with septic clot, small extra-dural abscess over roof of tympanum, septic infarcts in lungs.

CASE III.—Male, aged 13, admitted Cardiff Infirmary, February 2nd, 1899. Left otorrhoea of long standing, following measles. Radiating mastoid pain for last six weeks, with four shivering attacks. Ear discharge ceased for a week. On day following admission severe rigor; temperature 105°, pulse 178, respirations 38. Meatus occupied by polypus. Double optic neuritis. February 4th. Antrum and middle ear cleared out; much foul pus; temporo-sphenoidal lobe and cerebellum explored with negative results; extradural abscess found in sinus groove; sinus pulsated feebly, and was not opened. Temperature reached normal. Recovery uneventful. Permanent sinus left behind ear. In good health now (April 22nd, 1903).

CASE IV.—Male, aged 42, admitted Union Hospital, June 30th, 1902. Old-standing deafness in, and intermittent discharge from, right ear. Pyrexia, which subsided after syringing, but returned on July 7th with a severe rigor. Seen by me at request of Dr. Alfred Sheen, Medical Officer to Union Hospital. "Complete" mastoid operation performed on July 14th. Patient died thirty-six hours later. *Post mortem*, septic thrombus in lateral sinus reaching from genu to jugular bulb. Organs in condition which accompanies acute septic infection. No secondary abscesses.

CASE V.—Male, aged 24, admitted Cardiff Infirmary, August 5th, 1902. Right otorrhoea three years. Discharge ceased a month before admission, and pain commenced in and around ear. Daily vomiting for a week; no rigors. Temperature 104°; very ill. First operation: Antrum and middle ear cleared out. Temperature came down to 99°, but later rose to 103°, and patient had a rigor. Second operation, twenty-four hours later: Lateral sinus exposed and freely opened, and much foul thrombus cleared out. Convalescence interrupted by attacks of pyrexia with rigors; temperature fell after 10 c.cm. of antistreptococcus serum. Now (April 21st, 1903) is well and strong; still has sinus behind ear.

CASE VI.—Male, aged 15. Private patient, under Dr. Mulligan, Abersychan, Mon. Operation at patient's house on November 12th, 1902. Left otorrhoea of ten years' duration following scarlet fever. "Polypus" removed from left ear a year ago. Four days before operation taken suddenly ill with left mastoid pain, fever, and rigors. Pain extended down neck. On day before operation five severe rigors; temperature 106°. Operation in small country house; bad light. Assistant, the village barber, who fainted at an early stage of the proceedings, his place being taken by the patient's father. Antrum and middle ear cleared out; lateral sinus exposed in its groove; foul thick pus surrounded it, and it did not pulsate; sinus opened freely, and septic breaking-down clot removed. Internal jugular opened in neck, the incision having to be extended low down to get below clot. Venous channel washed out. Recovery interrupted by febrile attacks and rigors, pain in the right side of the chest, and cough. Temperature fell after antistreptococcus serum, and after acetanilide (8 gr.), given by Dr. Mulligan. Formalin inhalations and urotropine internally were also used for a time. Boy eventually recovered, and was in good health on April 21st, 1903.

I have used the term "pyaemia" in the title of this paper in order to emphasize the general infective nature of the process which we are considering and the necessity of isolating the source of general infection to bring about recovery. Three of the cases (half the total number) died, and of these three, two had secondary abscesses in the lungs, while the third was the victim of an acute toxaemia, and might possibly have been saved by earlier intervention. Of the three cases that recovered, one was in an early stage, and the thrombus in the lateral sinus was probably only partial in character, while the symptoms of the other two showed that some general infection had taken place before the local source was cut off. They are, however, encouraging cases, as showing that recovery may follow even advanced conditions.

History.—In cases of lateral sinus pyaemia the history usually shows that the middle-ear trouble is of old standing, being a sequel of scarlet fever or measles in the younger patients; and in the older, as we have learnt latterly, of influenza. The patients are usually young adults, but they may be children, or, more rarely, older people.

Onset.—As a rule a patient who is going about his everyday occupations, accustomed to his deafness and his aural discharge, all at once finds himself the victim of a serious malady; rigors, sickness, and fever, with severe pain in and around the ear, are leading features of the onset. Less commonly, the onset is more gradual; increasing pain and fever leading up to a kind of crisis, signalized by vomiting or rigor. A cessation of the ear discharge (not really a cessation but a lessening) is not infrequently met with.

Symptoms.—In addition to the above points there is great prostration, loss of appetite and strength, with a characteristically rapid emaciation. The temperature usually remits, but may intermit: with the high fever there is a rapid pulse, coated tongue, foul breath and earthy complexion: constipation is more frequent in the earlier and diarrhoea in the later stages. There may be delirium, but the more usual mental condition is one in which the patient when roused answers questions sensibly and then sinks back into a condition of lethargy which may be interrupted by attacks of restlessness. The local symptoms consist of pain and tenderness over the affected mastoid process and over the corresponding side of the head: pain and stiffness in the muscles of the neck: sometimes oedema over the mastoid process. There is a diffuse swelling in the upper part of the neck and the cervical glands are enlarged and tender; later the internal jugular may be felt as a hard cord-like swelling. The superficial veins are sometimes greatly dilated. This was particularly noticeable in Case VI in the superficial temporal and its continuation, the external jugular. Optic neuritis is often present, but is in my opinion due more often to associated localized meningitis over the tegmen tympani and tegmen antri than to the inflammation around the sinus itself. Examination of the meatus shows a perforated or entirely destroyed tympanic membrane with thick curdy pus occupying the middle ear, or that cavity and the meatus may be filled with the infected granulation masses commonly known as polypi. If unrelieved by surgical intervention, later symptoms arise which indicate general infection. As might be expected, the lungs are first involved, and there is a teasing cough with intermittent

* A paper read before the South Wales and Monmouthshire Branch of the British Medical Association.